UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,745	10/12/2005	Florian Lang	Ruff-3	6945

23599 7590 08/16/2007

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
2200 CLARENDON BLVD.
SUITE 1400
ARLINGTON, VA 22201

EXAMINER	
DANG, IAN D	

ART UNIT	PAPER NUMBER
1647	

MAIL DATE	DELIVERY MODE
08/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,745	LANG ET AL.	
	Examiner	Art Unit	
	Ian Dang	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *53-104* is/are pending in the application.

4a) Of the above claim(s) *57-58 and 65-104* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *53-56 and 59-64* is/are rejected.

7)☒ Claim(s) *54 and 61* is/are objected to.

8)☒ Claim(s) *53-104* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/05/2005 and 12/06/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 53-64, and the elected species Sgk1 in the communication filed on 06/18/2007 is acknowledged.

The traversal is on the ground that there is no undue burden to search additional subject matter. This is not found persuasive for the following reasons:

(i) Applicant's attention is directed to MPEP 808.02 which states that "Where the related inventions as claimed are shown to be distinct under the criteria of MPEP 806.05(c-I), the examiner, in order to establish reasons for insisting upon restriction, must show by appropriate explanation one of the following: (A) Separate classification thereof: (B) A separate status in the art when they are classifiable together; (C) A different field of search." As set forth in the Restriction requirement, the separate classification established for each Group demonstrates that each distinct Group has attained recognition in the art as a separate subject for inventive effort, and also a separate field of search. Thus, the Restriction requirement is proper.

In addition, Applicant argues that no burden is placed on the examiner to consider all claims. As discussed above, the separate classification established for each Group demonstrates that each distinct Group requires a separate field of search, and a search of one Group would not reveal art on the other Groups, thus imposing a burden on the examiner. Furthermore, each group requires a non-coextensive sequence and non patent literature search.

(ii) Applicant's arguments of 18 June 2007 regarding the traversal of the election of the species Sgk1 have been fully considered but are not found persuasive. The species are

independent or distinct because claims to the different species recite the mutually exclusive characteristics of such species. There is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

The requirement is still deemed proper and is therefore made FINAL. Claims 57-58 and 65-104 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 18 June 2007.

Claims 53-56 and 59-64 are pending and under examination.

Claim Objections

Claim 54 is objected to because of the following informalities: claim 54 recites a non-elected invention.

Claim 61 is objected to because of the following informalities: there is a typographical error regarding syndrome. An "s" is missing at the end of the word Syndrome.

Appropriate correction is required.

Claim Rejections - 35 USC § 101 and 35 USC § 112 (Second paragraph)

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 53-56 and 59-64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 53-56 and 59-61 provides for the use of a method for diagnosing diseases, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 53-56 and 59-61 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claims 62-64 recite a method for diagnosing predispositions to obesity, characterized in that at least one polymorphism is detected in sgk1. The claim is incomplete for omitting essential steps. While all of the technical details of a method need not be recited, the claims should include enough information to clearly and accurately describe the invention and how it is to be practiced. The minimum requirements for method steps include an active step in which the substance for detecting the expression and function of Sgk1 necessary for the diagnosis is

recited, and a correlation step describing how the results of the detection allow for the diagnosis.

Claims 53-56 and 59-64 are indefinite because the claims do not have a step that clearly relates back to the preamble. For example, the preamble of claim 53 recites "a method for diagnosing diseases which are associated with disturbed glucose transport". However, there is no step in the body of the claim indicating that the diagnosis of a disease has taken place.

The term "disturbed" in claim 53 is a relative term which renders claims 53-56 and 59-64 indefinite. The term "disturbed" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For instance, the term "disturbed" encompasses increases, decreases, and non-functional activity of a glucose transport. Claims 53-56 and 59-64 are indefinite because the elements recited in the claim do not constitute proper Markush groups. The claims are indefinite in the alternative use of "and/or" because it is not clear what controls which of these limitations. (See especially claims 53, 59, and 62.) See MPEP § 2173.05(h).

Claim Rejections - 35 USC § 112 (Written Description)

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 53-56 and 59-64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 53 is drawn to a method for diagnosing diseases which are associated with disturbed glucose transport wherein at least one substance for detecting the expression and/or function of activated and/or inactive Sgk in particular Sgk1 is used.

The specification teaches that the diseases are preferably the metabolic syndrome, in particular obesity (page 10, lines 8-9) and that the aim is that of treating diseases which are associated with disturbed glucose transport or whether the aim is to increase the bodyweight of animals in connection with fattening the respective enzymes have to be affected in different ways (page 8, paragraph [0019]). In addition, the specification recites that the substances are antibodies or oligonucleotides (page 10, line 12-13). Furthermore, the specification teaches that the polynucleotide can comprise an antisense sequence which decreases of inhibits the expression of the at least one of said proteins (page 8, lines 15-16). The specification teaches that the polynucleotide encodes a peptide exerting an effect on the expression and/or function of Sgk (page 8, lines 17-19). Moreover, the specification recites that the active compound can be a "small molecular compound" preferably a "small molecular compound" having a molecular weight of <1000 (lines 25-27). In addition, the specification discloses that the active compound is at least one stimulant of the transcription of sgk1 preferably at least one glucocorticoid, mineral corticoid, gonadotropin and/or cytokine, in particular TGFbeta (page 9, paragraph [0021]). Furthermore, the specification teaches that a kinase consensus sequence is to be understood as meaning the amino acid sequences, which form the substrate site of the kinases, that is the site of phosphorylation (page 6, lines 17-21). Finally, aside from blood all other biological samples from which genetic material can be isolated are also in principle suitable (page 7, paragraph [0016] lines 26-28).

Thus, the claims are genus claims. The specification and claims do not indicate what distinguishing attributes are shared by the members of the genus. Specifically, the specification does not clearly define a disease associated with disturbed glucose transport, a substance, a kinase consensus sequence, an activating mutation, polymorphism, and a biological sample and all methods of using such. Thus, the scope of the claims includes numerous structural and functional variants, and the genus' are highly variant because a significant number of structural and functional differences between genus members is permitted. The specification and claims do not provide any guidance as to what changes should be made. Structural and functional features that could distinguish a disease associated with disturbed glucose transport, a substance, a kinase consensus sequence, an activating mutation, polymorphism, and a biological sample are missing from the disclosure. No common attributes identify the members of the genus. The general knowledge and level of skill in the art do not supplement the omitted description because specific, not general, guidance is what is needed. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, a disease associated with disturbed glucose transport, a substance, a kinase consensus sequence, an activating mutation, polymorphism, and a biological sample are insufficient to describe the genus.

The written description requirement for a claimed genus' may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant identifying characteristics, i.e. structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between structure and function structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. In the instant case, the specification fails to provide sufficient descriptive information,

such as definitive structural or functional features of the genus for a disease associated with disturbed glucose transport, a substance, a kinase consensus sequence, an activating mutation, polymorphism, a biological sample and all methods of using such.

There is no description of the special features, which are critical to the structure and function of the genus claimed. Furthermore, the prior art does not provide compensatory structural or correlative teachings sufficient to enable one of skill to isolate and identify a disease associated with disturbed glucose transport, a substance, a kinase consensus sequence, an activating mutation, polymorphism, and a biological sample encompassed by the limitations. Thus, no identifying characteristics or properties of the instant disease associated with disturbed glucose transport, substance, a kinase consensus sequence, an activating mutation, polymorphism, and a biological sample are provided such that one of skill would be able to predictably identify the encompassed variant biological and chemical entities recited in the methods of the instant claims. One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe the genus. Thus, applicant was not in possession of the claimed genus.

Claim Rejections - 35 USC § 112 (Enablement)

Claims 53-56 and 59-64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In In re Wands, 8USPQ2d, 1400 (CAFC 1988) page 1404, the factors to be considered in determining whether a disclosure would require undue experimentation include: (1) Nature of

the invention, (2) the state of the prior art, (3) the predictability or lack thereof in the art, (4) the amount of direction or guidance present, (5) the presence or absence of working examples, (6) the breath of the claims, (7) the quantity of experimentation needed, (8) relative skill of those in the art.

Nature of the invention and breath of the claims

The invention is drawn to a method for diagnosing diseases which are associated with disturbed glucose transport wherein at least one substance for detecting the expression and/or function of activated and/or inactive Sgk in particular Sgk1 is used. The invention is broad because the recitation of claim 53 encompasses a large number of diseases, substances, and biological samples. For instance, the specification teaches that the diseases are preferably the metabolic syndrome, in particular obesity (page 10, lines 8-9) and that the aim is that of treating diseases which are associated with disturbed glucose transport or whether the aim is to increase the bodyweight of animals in connection with fattening the respective enzymes have to be affected in different ways (page 8, paragraph [0019]). In addition, the specification recites that the substances are antibodies or oligonucleotides (page 10, line 12-13). Furthermore, the specification teaches that the polynucleotide can comprise an antisense sequence which decreases of inhibits the expression of the at least one of said proteins (page 8, lines 15-16). The specification teaches that the polynucleotide encodes a peptide exerting an effect on the expression and/or function of Sgk (page 8, lines 17-19). Moreover, the specification recites that the active compound can be a "small molecular compound" preferably a "small molecular compound" having a molecular weight of <1000 (lines 25-27). In addition, the specification discloses that the active compound is at least one stimulant of the transcription of sgk1 preferably at least one glucocorticoid, mineral corticoid, gonadotropin and/or cytokine, in particular TGFbeta (page 9, paragraph [0021]). Finally, aside from blood all other biological

samples from which genetic material can be isolated are also in principle suitable (page 7, paragraph [0016] lines 26-28).

Unpredictability and state of the art

The state of the art for the role of Sgk1 in the regulation of renal function and blood pressure has been well documented in the art, but the role of Sgk1 associated with a disease with glucose transport has not been established at this point in the art. For instance, the reference by Vallon et al. (2005, Current Opinion in Nephrology and Hypertension, Volume 14, pages 59-64) teaches that Sgk1 plays a role in the regulation of renal function and blood pressure (page 59, abstract). Although the biological activity of Sgk1 is known, Vallon et al. teach that further studies are necessary to better define the role of Sgk1 and its polymorphisms in kidney function and blood-pressure regulation, which is required to assess the potential of Sgk1 as a target for novel therapeutic strategies (page 64, left column, last paragraph).

However, the association of Sgk1 with glucose transport is not well established because the link between Sgk1 and several glucose transporters requires further investigation. For instance, Palmada et al. (2006, Diabetes, Volume 55, pages 421-427) teach that the SGK-1 dependent regulation of GLUT1 may participate in the adjustment of cellular glucose uptake (page 426, left column, last paragraph). In addition, Jeyaraj et al. (2007, Biochemical and Biophysical Research Communications, volume 356, pages 629-635) teach that Sgk-1 may contribute to the insulin and GLUT-4 dependent regulation of cellular glucose uptake (pages 629, last line of abstract).

In addition, the association of a disease, such as obesity, with disturbed glucose transport involving Sgk1 is not established in the art. For instance, Dieter et al. (2004, Obesity Research Volume 5, Issue 12, pages 862-870) teach that it is enticing to speculate that increased in BMI in those individuals is at least partially caused by enhanced SGLT1 activity

caused by the observation that the E8CC/CT;I6CC polymorphism in the sgk1 gene is associated with an increase in BMI. However, Dieter et al. further teach that Sgk1 may influence body weigth by further mechanisms (page 868, 2nd full paragraph). Finally, Dieter et al. conclude that the mechanisms underlying the association of the polymorphism (the E8CC/CT;I6CC) with the phenotype of the carriers are unknown. Thus the link of SGK-1, SGLT1 and gain of body weight remains a matter of speculation (page 868, 2nd full paragraph). Although the role for the Sgk1 polymorphism E8CC/CT;I6CC has been linked to an increase in blood pressure, its correlation with a predisposition with obesity has not been established in the art.

In view of these teachings in the art and the limited guidance provided in the specification, the disclosure regarding the *in vitro* regulation of Na+-coupled glucose transporter Sglt1 with the expression of Nedd4-2, and Sgk1 in oocytes (Figures 1 and 2) is not predictable for (1) a method for diagnosing diseases which are associated with disturbed glucose transport wherein at least one substance for detecting the expression and/or function of activated and/or inactive Sgk in particular Sgk1 is used, and (2) a method for diagnosing predispositions to obesity characterized in that least one polymorphism is detected in sgk1, such as E8CC/CT;I6CC.

The amount of direction or guidance present

Applicants' disclosure is limited to the regulation of the Na+-coupled glucose transporter Sglt1 by Nedd4-2, Sgk1, S422D Sgk1, and K127N Sgk1 in oocytes (Figures 1 and 2, paragraph [0038] and [0039]). However, the specification does not provide guidance or direction regarding a method for diagnosing diseases which are associated with disturbed glucose transport wherein at least one substance, for detecting the expression and/or function of activated and/or

inactive Sgk1 is used. The specification also does not provide guidance or direction regarding a method for diagnosing predispositions to obesity, characterized in that at least one polymorphism is detected in sgk1.

In addition, the specification does not provide guidance regarding "disturbed glucose transport". Furthermore, the specification does not provide any guidance regarding the identifying characteristics for the substance for detecting the expression and function of Sgk1 and antibodies against Sgk-1. Furthermore, the specification does not provide guidance with respect to the link between Sgk1 and the diagnosis of a disease, such as obesity. There is little guidance in the instant specification as to whether the disease being diagnosed is associated with an active Sgk1 or an inactive Sgk1. Finally, there is no guidance regarding how the detection of a mutation of Sgk1 or the polymorphism E8CC/Ct, I6CC in Sgk1 can be linked to a diagnosis of a disease associated with a disturbed glucose transport.

Working Examples

Although Applicants have provided an example for the *in vitro* regulation of the Na+-coupled glucose transporter Sglt1 by Nedd4-2 and Sgk1 or the mutants S422DSgk1 and K127NSgk1 in oocytes (Figures 1 and 2), the specification does not provide any methods or working examples for the diagnosis of a disease associated with disturbed glucose transport with the detection of the expression of Sgk1. The specification also does not provide any methods or working examples of a disease associated with disturbed glucose transport involving the expression and function of Sgk1. In addition, the specification does not provide any example for a substance, such as an antibody for detecting the expression and function of Sgk1. Finally, Applicant has not provided any working example for role of a polymorphism of sgk1, such as E8CC/CT;I6CC in sgk1, associated with disturbed glucose transport or predispositions to obesity.

The quantity of experimentation needed

Without sufficient disclosure in the specification, it would require undue experimentation for one of skill in the art to be able to diagnose diseases which are associated with disturbed glucose transport wherein at least one substance, for detecting the expression and/or function of activated and/or inactive Sgk1 is used. In addition, it would require undue experimentation by one skill in the art to be able to practice the invention commensurate in scope with the claims because the claims are broadly drawn to a method for diagnosing diseases which are associated with disturbed glucose transport wherein at least one substance, for detecting the expression and/or function of activated and/or inactive Sgk1 is used.

A large quantity of experimentation is required to identify a disease associated with a disturbed glucose transport wherein a substance for detecting the expression and/or function of Sgk1 is used. A large quantity of experimentation would also be required to associate a nexus between a disease and active Sgk1 or inactive Sgk1. Undue experimentation would be required of the skilled artisan to determine what is disturbed glucose transport in a disease, as well as to identify substances for detecting the expression/ function of activated or inactive Sgk1, as required by the claims. The specification has not provided any identifying characteristics for the substance in order to detect the expression and function of Sgk1.

Finally, the nexus between the polymorphism in sgk1, such as E8CC/CT;I6CC, and a disease with disturbed glucose transport or a predisposition to obesity has not been established in the art and would require undue experimentation by one skill in the art to be able to practice the claimed method recited in the claim.

Conclusion

No claim is allowed.

Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian Dang whose telephone number is (571) 272-5014. The examiner can normally be reached on Monday-Friday from 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol can be reached on (571) 272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ian Dang

Patent Examiner
Art Unit 1647
August 3, 2007

Bridget E. Bunner

BRIDGET E. BUNNER
PRIMARY EXAMINER